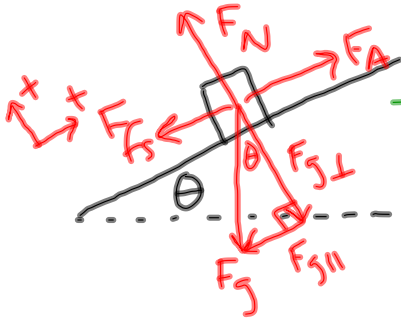
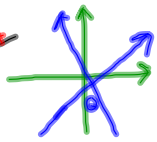
- HW:

  p. 141: 2, 3

  p. 143: 2, 3

- Turn in Shoe lab





Yes friction

$\mu_s = 0.5$ $m = 100\ kg$

Find the angle that requires the greatest applied force.

$F_{fs} = \mu_s F_N$ $\quad \Sigma \bar{F}_{\parallel} = 0$

$F_A - F_{g\parallel} = \mu_s F_{g\perp}$ $\quad -F_{fs} + F_A - F_{g\parallel} = 0$

$F_A - F_g \sin\theta = \mu_s F_g \cos\theta$ $\quad F_{fs} = F_A - F_{g\parallel}$

$F_A = \mu_s F_g \cos\theta + F_g \sin\theta$ $\quad \Sigma \bar{F}_{\perp} = 0$

$= F_g(\mu_s \cos\theta + \sin\theta)$ $\quad F_N - F_{g\perp} = 0$

$= (100kg)(9.8\ m/s^2)$ $\quad F_N = F_{g\perp}$

$[(.5)(\cos\theta) + \sin\theta]$

F_A (N)	θ
1093.7	60°
1095.3	62°
1095.6	64° → 65° ⇒ 1095.6
1094.5	66°
	68°

Arnold Strongman and Suzie Small pull on opposite ends of a rope in a tug of war. The greatest force exerted on the rope is by

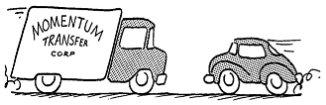
a) Arnold

b) Suzie

c) ... both the same

(Assume the rope's mass is negligible.)

IF A MACK TRUCK AND A VOLKSWAGEN HAVE A HEAD-ON COLLISION, WHICH VEHICLE WILL EXPERIENCE THE GREATER IMPACT FORCE?



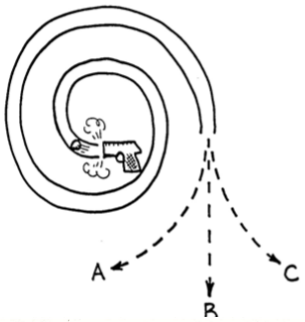
a) THE MACK TRUCK

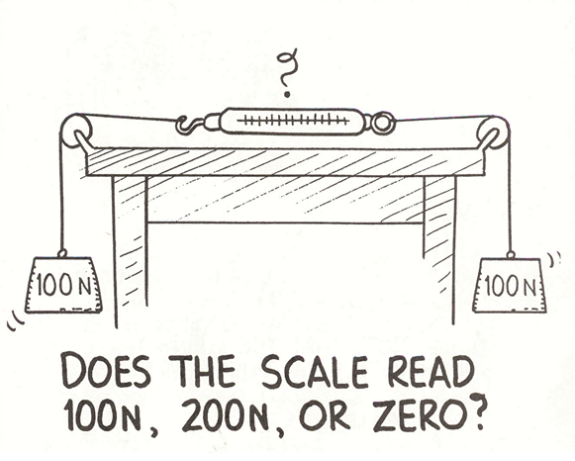
b) THE VOLKSWAGEN

c) BOTH THE SAME

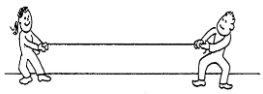
d) ... IT DEPENDS ON OTHER FACTORS

WHEN THE PELLET FIRED INTO THE SPIRAL TUBE EMERGES, WHICH PATH WILL IT FOLLOW? (NEGLECT GRAVITY)

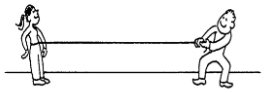




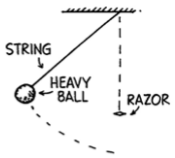
DOES THE SCALE READ 100N, 200N, OR ZERO?



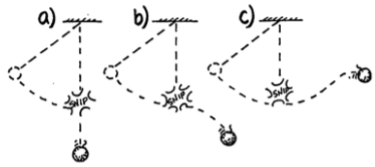
Two people of equal mass, 6 meters apart, attempt a tug of war on frictionless ice. If they pull on opposite ends of the rope with equal forces, each slides 3 meters to a point midway between them. Suppose instead that only one person pulls and the other fastens the rope around his or her waist. How far does each person slide? (Neglect any effects of the rope's mass.)

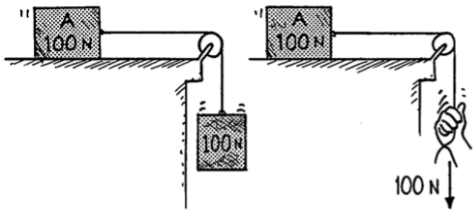


WHEN THE BALL AT THE END OF THE STRING SWINGS TO ITS LOWEST POINT, THE STRING IS CUT BY A SHARP RAZOR.



WHICH PATH WILL THE BALL THEN FOLLOW?





IN BOTH CASES AN APPLIED FORCE OF 100 N ACCELERATES THE 100-N BLOCK.

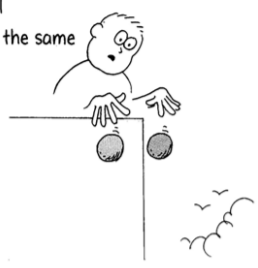
IN WHICH CASE IS THE ACCELERATION GREATER?

Two smooth balls of exactly the same size, one made of wood and the other of iron, are dropped from a high building to the ground below. The ball to encounter the greater force of air resistance on the way down is the

a) wooden ball

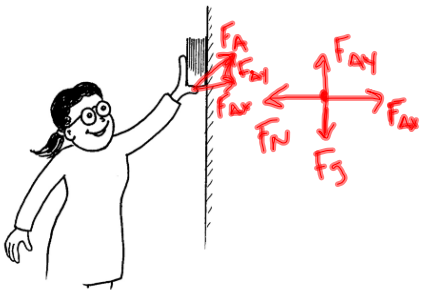
b) iron ball

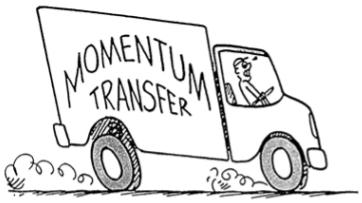
c) ... both the same



She holds the book stationary against the wall as shown. Friction on the book by the wall acts

(a) upward.
(b) downward.
(c) can't say.





$F = ma_1$

$F = (2m)a_2$

$1 = \frac{1}{2}\frac{a_1}{a_2}$

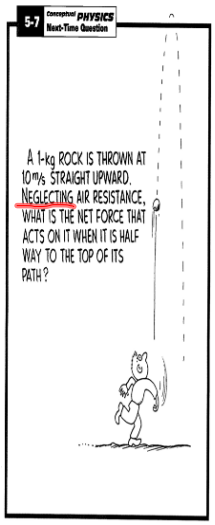
$2 = \frac{a_1}{a_2}$

The brakes are slammed on a speeding truck and it skids to a stop. If the truck were heavily loaded so it had twice the total mass, the skidding distance would be

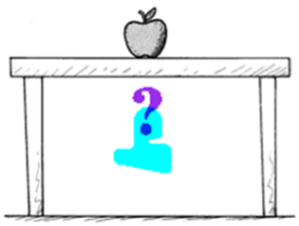
a) the same
b) 1½ times as far
c) twice as far
d) four times as far

$\Delta x = v_{iy}t + \frac{1}{2}at^2$

$v_{fy}^2 = v_{iy}^2 + 2a\Delta x$



Consider the apple at rest on the table. If we call the gravitational force exerted on the apple *action*, what is the *reaction force* according to Newton's 3rd Law?



A block is at rest on a ramp that is inclined at 30 degrees above the horizontal. The mass of the block is 85 kg, and the applied force (direction is along the ramp) that just causes the block to move is 130 N. What is the coefficient of friction between the block and the incline?